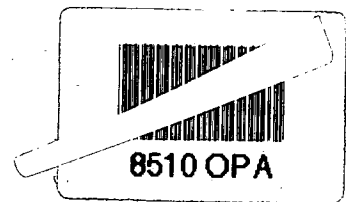


March 1998
SAMPLING PLAN

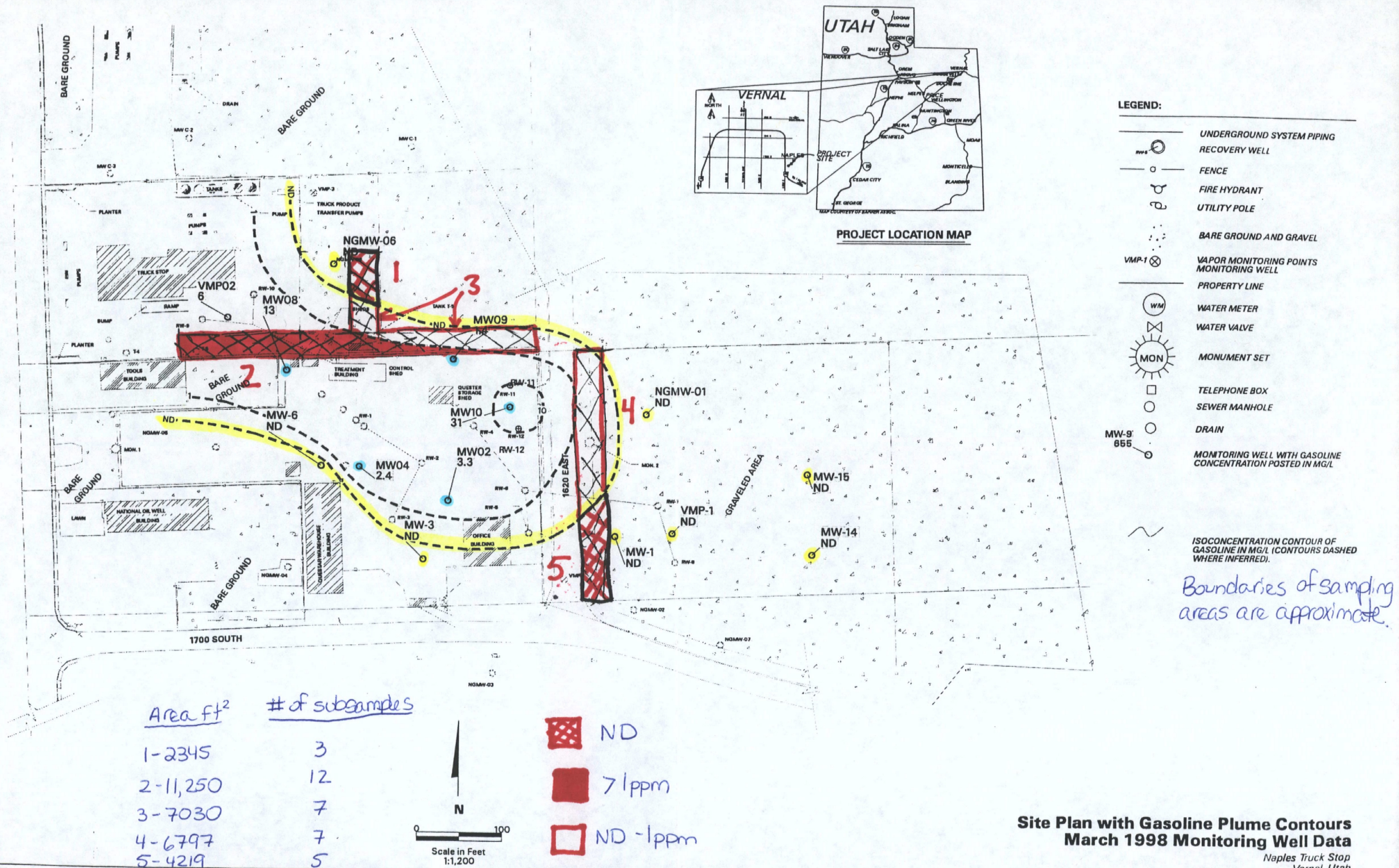


The sampling plan consists of six locations. Five of the locations are located on the Naples Truck Stop site, and one location to be used for a reference will be located off-site from a known non-contaminated area. Each sample will be a composit consisting of several subsamples collected from within each of six discrete sampling areas. The subsamples will be collected at a density of 1 per 1000 square feet. In each area, subsamples will be composited and homogenized in a 2 ½ gallon bucket, and then dispensed into their appropriate sample jars. The sampling locations are as follows:

1. Approximately 2,345 square feet. Located north of the treatment building and west of the truck stop, next to NGMW-06. This location is located outside the plume. Three subsamples will be taken in this area.
2. Approximately 11,250 square feet. Located southeast of the truck stop building and south of VMPO2. This location is located within the plume. Twelve subsamples will be taken in this area.
3. Approximately 7,030 square feet. Located at the leading edge of the plume north of the treatment building and control shed.
4. Approximately 6797 square feet. Located on the west side of NGMW-01. This location is at the leading edge of the plume.
5. Approximately 4219 square feet. Located west of MW-1. This location is outside of the plume.
6. Reference location to be determined in the field.

ANALYTICAL PARAMETERS

VOA
Pest/PCB
Herbicides
TPH
TAL metals + Mo, B
Agronomic Assessment
Soil Microbiology



ATTACHMENT A

QUARTERLY MONITORING RESULTS

FOR MAY, JUNE, AND JULY 1998

PART II.

Data Quality Assessment

This data quality assessment (DQA) for the Naples Truck Stop System is applicable to the analytical results for the following groundwater and vapor samples (listed in Table 1) collected during the months of May, June, and July 1998 (one monthly sample from each location). The combined vapor concentration stripped out of groundwater sample (ATMO01) and the vapor skid sample (VEFSKID01) were added to the sampling event in order to monitor the effluent emissions from the vapor treatment system, in accordance with Utah regulations.

Table 1 - Sample Location Summary		
<i>Sample Location Name</i>	<i>Sample Location ID</i>	<i>Number of Locations</i>
Groundwater Monitoring Wells	MW01 - 04, 06, 08 - 10, 14, 15, and NGMW01 & 06	twelve groundwater (GW) wells
Effluent to POTW01	EPOTW01	one GW port
Vapor Monitoring Point #1	VMP01	one GW port
Vapor Monitoring Point #2	VMP02	one GW port
Vapor Stack Sample	STACK01	one vapor port
Combined Vapor Concentration Stripped Out of Groundwater	ATMO01	one vapor port
Vapor SKID Sample	VEFSKID01	one vapor port

Sample location ATMO01 was only sampled on May 5, 1998 and VERFSKID01 was only sampled on June 1, 1998. Sample location Stack01 was not collected in the May sampling event.

All groundwater samples (MWs, VMPs and EPOTW01) were analyzed for benzene, toluene, ethylbenzene, xylenes (BTEX) by Method SW8020, and total volatile petroleum hydrocarbons (TVPH) as gasoline by Method M8015V. All method defined QA/QC requirements specified in SW-846 Test Methods for Evaluating Solid Waste Physical (Chemical Methods, US EPA, January 1995, 3rd edition, Updates I, II, IIA, and IIB) were followed. All groundwater samples were analyzed by Quanterra Incorporated of Santa Ana, California.

The vapor samples (ATMO01,VEFSKID01 and STACK01) were collected in SUMMA canisters and analyzed for BTEX and TVPH as using elements specified in the EPA

Compendium of Methods for the Determination of Toxic Organic Compounds in Ambient Air (April 1984) by Method MTO-3S (modified for this analysis). These samples were analyzed by Air Toxics, LTD. of Folsom, California.

The data are of acceptable quality and are considered usable to support the U.S. Army Corps of Engineers (USACE), Naples Utah Truck Stop Project. The precision, accuracy, and completeness objectives for this sampling event were met. Table 4 (A & B) shows the sampling and analytical completeness. Completeness is measured in two ways; 1) sampling completeness (samples collected vs. planned), and 2) analytical completeness (percent of acceptable (non-rejected) analytical results vs. the total number of results reported).

Data Evaluation Process

The sample data was organized into work orders. A work order number is assigned by the laboratory and contains data for all environmental samples received by the laboratory on a given day. Data verification was performed in accordance with the general principles defined in the Jacobs Data Verification Standard Operating Procedure (SOP). Analytical results for the sample locations listed in Table 1 were reported in the work orders listed in Table 2.

Table 2 -Sample Work Orders			
Lab / Work Order Number	Date Sampled	Matrix	Analytical Method
QUANTERRA / 132006	05/05/98	water	M8015V & SW8020
ATL / 9805088	05/05/98	vapor	MTO-3S (modified)
QUANTERRA / 132401	06/01/98	water	M8015V & SW8020
ATL / 9806049	06/01/98	vapor	MTO-3S (modified)
QUANTERRA / 133134	07/15/98	water	M8015V & SW8020
ATL / 9807243	07/16/98	vapor	MTO-3S (modified)

The following quality control (QC) parameters were evaluated:

- holding times
- laboratory method blanks
- trip blanks (TB)
- surrogate recoveries
- matrix spike and matrix spike duplicate (MS/MSD) recoveries
- laboratory control sample and laboratory control duplicate (LCS/LCD) recoveries
- field duplicate (FD) precision

All results, including data qualifier flags, are presented in Part III (Tables 1 and 2), Summary of Analytical Data from Site Monitoring Wells in Part IV (Tables 3, 4, and 5), and Summary of Analytical Data from Site Treatment System in Attachment A. All analytical results that required the addition of a qualifier flag based on the evaluation process are discussed below. Table 3, in this section, provides a summary of all qualified data. When a result is qualified, a reason code (RC) is also added to the affected sample result and both the qualifier and reason code are entered into the database. The qualifier flags and reason codes used for the Naples project results are summarized below:

Qualifier Flags

J = indicates an estimated value
UJ = indicates an estimated non-detect

Reason Codes

T = trace concentration detected
2 = Method blank contamination
7 = Trip blank contamination

Holding Times

All samples were analyzed within the technical holding time limits.

Laboratory Method Blanks

All laboratory method blanks were analyzed at the required frequency and all results were non-detect at the method detection limit (MDL) with the exception of the method blank results for Methods SW8015V and SW8020. For Method SW8015V, the method blank associated with the July samples were positive for TVPH at a trace concentration. For Method SW8020, the method blank associated with the May samples were positive for toluene and total xylenes at trace concentrations. For all associated sample results less than five times the blank concentration, the sample results were changed to estimated non-detect with a '2' reason code (see Table 3). Additionally, the MDL was raised to the reported sample concentration and the practical quantitation limit was raised to five times the blank concentration. For sample concentrations greater than five times the blank concentration, no data qualifiers were applied.

Field Blanks

Trip blanks were collected and analyzed at the required frequency and all results were non-detect at the MDL with the exception of the trip blank result for Method SW8015V associated with the July 15 sampling event. For Method SW8015V, the trip blank was positive for TVPH at a trace concentration. For all associated sample results less than five times the blank concentration, the sample results were changed to non-detect with a '7' reason code (see Table 3). Additionally, the MDL was raised to the reported sample concentration and the practical quantitation limit was raised to five times the blank concentration. For sample concentrations greater than five times the blank concentration, no data qualifiers were applied.

Surrogates

For methods M8015M and SW8020, surrogate compounds are added to each groundwater sample to measure method performance and possible matrix effect. Recoveries were within control limits for all samples. For method MTO-3S, the addition of surrogates is not required.

Laboratory Control Samples (LCS)

The LCS is the primary measure of accuracy and monitors overall method performance by the laboratory, independent of matrix effects. The laboratory analyzed LCSs at the

appropriate frequency of one per analytical batch. In the case where no MS/MSD pair was designated in the batch, a LCS duplicate (LCSD) was analyzed. All spike recoveries were within the project required control limits. As a measure of analytical batch precision, the relative percent difference (RPD) between the LCS and LCSD is measured in the absence of MS/MSD batch data. All RPD values were within the project precision requirements for Methods SW8015V and SW8020.

Matrix Spike/ Matrix Spike Duplicates

The MS/MSD pair is used to measure precision and assess matrix effects. For Methods SW8015V and SW8020, all MS/MSD recoveries and RPDs were within acceptance limits. MS/MSD pairs are not required for Method MTO-3S.

Field Duplicates

Field duplicates are collected to measure field sampling precision and laboratory precision. Duplicate samples were sampled at a frequency of one per sampling event or 6.1 percent for Methods M8015V and SW8020. For Method MTO-3S, one field duplicate was collected for the four samples, representing a 25 percent frequency. The field duplicate precision objective of 40 maximum RPD was met for all analytes.

Preliminary Result Corrections

Due to the positive results detected in the method blanks and trip blanks, several results for Methods SW8015V and SW8020 were changed to non-detect at an elevated detection limit. All results listed in Table 3 with a '2' or '2,7' reason code have been changed to non-detect at an elevated detection limit.

Trace Values

Trace values are estimated values detected between the MDL and PQL. It is a qualitative (not quantitative) value indicating the presence of the reported analyte. Six gasoline petroleum hydrocarbon results reported by Method SW8015V and eighteen sample results reported by Method SW8020 were qualified as estimated values with a 'J' flag and a 'T' reason code (see Table 3).

Table 3 - Summary Of Qualified Data

<i>Location Id</i>	<i>Date Sampled</i>	<i>Matrix</i>	<i>Method</i>	<i>Analyte</i>	<i>Result Value, Qualifier & Reason Code</i>	<i>Units</i>
MW01	01-Jun-98	water	SW8015V	PHCG	0.053 J(T)	mg/L
MW03	01-Jun-98	water	SW8015V	PHCG	0.042 J(T)	mg/L
MW03	15-Jul-98	water	SW8015V	PHCG	0.041 J(T)	mg/L
MW06	01-Jun-98	water	SW8015V	PHCG	0.05 J(T)	mg/L
MW06	15-Jul-98	water	SW8015V	PHCG	0.022 J(T)	mg/L
NGMW01	01-Jun-98	water	SW8020	PHCG	0.031 J(T)	mg/L
MW02	05-May-98	water	SW8020	toluene	2.9 J(T)	ug/L
MW02	01-Jun-98	water	SW8020	toluene	1.2 J(T)	ug/L
MW02	15-July-98	water	SW8020	toluene	1.2 J(T)	ug/L
MW04	05-May-98	water	SW8020	toluene	0.62 J(T)	ug/L
MW04	01-Jun-98	water	SW8020	toluene	1.1 J(T)	ug/L
MW04 FD	15-Jul-98	water	SW8020	toluene	0.91 J(T)	ug/L

Table 3 - Summary Of Qualified Data						
MW04	15-Jul-98	water	SW8020	toluene	1.5 J(T)	ug/L
MW06	01-Jun-98	water	SW8020	toluene	0.43 J(T)	ug/L
MW06	01-Jun-98	water	SW8020	ethyl benzene	0.24 J(T)	ug/L
MW08	01-Jun-98	water	SW8020	toluene	0.55 J(T)	ug/L
MW08	15-Jul-98	water	SW8020	toluene	1.0 J(T)	ug/L
MW09	01-Jun-98	water	SW8020	toluene	0.86 J(T)	ug/L
MW09	15-Jul-98	water	SW8020	toluene	0.30 J(T)	ug/L
MW09	05-May-98	water	SW8020	total xylenes	3.2 UJ(2)	ug/L
MW10	01-Jun-98	water	SW8020	toluene	91 J(T)	ug/L
MW10	15-Jul-98	water	SW8020	toluene	98 J(T)	ug/L
MW14	15-Jul-98	water	SW8015V	PHCG	0.034 UJ(2,7)	mg/L
MW14	05-May-98	water	SW8020	total xylenes	0.35 UJ(2)	ug/L
MW14	05-May-98	water	SW8020	toluene	0.15 UJ(2)	ug/L
MW15	15-Jul-98	water	SW8015V	PHCG	0.032 UJ(2,7)	mg/L
VMP02	05-May-98	water	SW8020	toluene	17 J(T)	ug/L
VMP02	01-Jun-98	water	SW8020	toluene	5.0 J(T)	ug/L
VMP02	15-Jul-98	water	SW8020	toluene	20 J(T)	ug/L

Completeness

Overall sampling and analytical completeness objectives (90 percent) were met for all analytical methods (see Table 4(A) and 4(B)).

Table 4 (A) - Sampling Completeness	
Sample Event	Groundwater Pump & Treat System, Naples Truck Stop
Laboratory	Quanterra Inc. and Air Toxics, LTD.
Matrix	Groundwater & Vapor
Analytical Methods	MTO-3S, M8015V, & SW8020 (BTEX)
Sampling Period	May - July 1998
Total Number of Samples Planned	49
Total Number of Samples Collected	49
Sampling Completeness (%)	100

Table 4 (B) - Analytical Completeness	
Sample Event	Groundwater Pump & Treat System, Naples Truck Stop
Laboratory	Quanterra Inc. and Air Toxics, LTD.
Analytical Methods	MTO-3S, M8015V, SW8020 (BTEX)
Sampling Period	May - July 1998
Total Number of Samples Analyzed	49
Total Number of Results Reported	245
Total Number of Results Accepted	245
Total Number of Results Rejected	0
Analytical Completeness (%)	100

* Table 4(A & B) does not include TBs and FDs.

Summary

The quality of the data is acceptable and all analyte results are usable with only minor qualifications. The results listed in Table 3 were qualified for the following reasons: trace values detected between the MDL and PQL, method blank contamination, and trip blank contamination.

PART III

Summary of Analytical Data from Site Monitoring Wells

Analytical Data Summary Table 1
Monitoring Well Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: M8015V

Page 1

Location	Sample Date	Matrix	Sample Type	Units	PHCG
MW01	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.053 J :T
	15-Jul-98	WG	N1	MG/L	0.02 U
MW02	05-May-98	WG	N1	MG/L	1.9
	01-Jun-98	WG	N1	MG/L	1.8
	15-Jul-98	WG	N1	MG/L	2.1
MW03	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.042 J :T
	15-Jul-98	WG	N1	MG/L	0.041 J :T
MW04	05-May-98	WG	N1	MG/L	1
	01-Jun-98	WG	N1	MG/L	1.4
	15-Jul-98	WG	FD1	MG/L	1.3
	15-Jul-98	WG	N1	MG/L	1.5
MW06	05-May-98	WG	FD1	MG/L	0.02 U
	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	FD1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.05 J :T

Legend:

WG = Water N1 = Environmental Sample FD1 = Field Duplicate Sample
 PHCG = Petroleum Hydrocarbons (Gasoline) U = Non-detect
 UJ :27 = Estimated non-detect due to method blank and field blank contamination

MG/L = Milligrams per Liter
 J :T = Estimated due to Trace level detection

Analytical Data Summary Table 1
Monitoring Well Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: M8015V

Page 2

Location	Sample Date	Matrix	Sample Type	Units	PHCG
MW06	15-Jul-98	WG	N1	MG/L	0.022 J :T
MW08	05-May-98	WG	N1	MG/L	2.2
	01-Jun-98	WG	N1	MG/L	1
	15-Jul-98	WG	N1	MG/L	3
MW09	05-May-98	WG	N1	MG/L	0.92
	01-Jun-98	WG	N1	MG/L	0.88
	15-Jul-98	WG	N1	MG/L	0.68
MW10	05-May-98	WG	N1	MG/L	33
	01-Jun-98	WG	N1	MG/L	27
	15-Jul-98	WG	N1	MG/L	28
MW14	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.02 U
	15-Jul-98	WG	N1	MG/L	0.034 UJ :27
MW15	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.02 U
	15-Jul-98	WG	N1	MG/L	0.032 UJ :27
NGMW01	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.031 J :T

Legend:

WG = Water N1 = Environmental Sample FD1 = Field Duplicate Sample
 PHCG = Petroleum Hydrocarbons (Gasoline) U = Non-detect
 UJ :27 = Estimated non-detect due to method blank and field blank contamination

MG/L = Milligrams per Liter
 J :T = Estimated due to Trace level detection

Analytical Data Summary Table 1
Monitoring Well Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: M8015V

Page 3

Location	Sample Date	Matrix	Sample Type	Units	PHCG
NGMW01	15-Jul-98	WG	N1	MG/L	0.02 U
NGMW06	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.02 U
	15-Jul-98	WG	N1	MG/L	0.02 U
VMP01	05-May-98	WG	N1	MG/L	0.02 U
	01-Jun-98	WG	N1	MG/L	0.02 U
	15-Jul-98	WG	N1	MG/L	0.02 U
VMP02	05-May-98	WG	N1	MG/L	8.3
	01-Jun-98	WG	N1	MG/L	4.5
	15-Jul-98	WG	N1	MG/L	7.8

Legend:

WG = Water N1 = Environmental Sample FD1 = Field Duplicate Sample
 PHCG = Petroleum Hydrocarbons (Gasoline) U = Non-detect
 UJ :27 = Estimated non-detect due to method blank and field blank contamination

MG/L = Milligrams per Liter
 J :T = Estimated due to Trace level detection

Analytical Data Summary Table 2
Monitoring Well Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: SW8020

Page 1

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
MW01	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
MW02	05-May-98	WG	N1	UG/L	13	2.9 J:T	180	84
	01-Jun-98	WG	N1	UG/L	11	1.2 J:T	92	33
	15-Jul-98	WG	N1	UG/L	39	1.2 J:T	110	52
MW03	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
MW04	05-May-98	WG	N1	UG/L	15	0.62 J:T	65	65
	01-Jun-98	WG	N1	UG/L	15	1.1 J:T	99	120
	15-Jul-98	WG	FD1	UG/L	14	0.91 J:T	66	76
	15-Jul-98	WG	N1	UG/L	19	1.5 J:T	95	110
MW06	05-May-98	WG	FD1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	FD1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.43 J:T	0.24 J:T	1.2
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U

Legend:

WG = Water
BZ = Benzene
U = Non-detect

N1 = Environmental Sample
BZME = Toluene
FD1 = Field Duplicate Sample
EBZ = Ethylbenzene
UJ :2 = Estimated non-detect due to method blank contamination

UG/L = Micrograms per Liter
J:T = Estimated due to Trace level detection

Analytical Data Summary Table 2
Monitoring Well Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: SW8020

Page 2

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
MW08	05-May-98	WG	N1	UG/L	33	1.1 U	80	45
	01-Jun-98	WG	N1	UG/L	17	0.55 J:T	45	25
	15-Jul-98	WG	N1	UG/L	140	1 J:T	120	33
MW09	05-May-98	WG	N1	UG/L	53	0.55 U	62	3.2 UJ:2
	01-Jun-98	WG	N1	UG/L	44	0.86 J:T	66	2.2
	15-Jul-98	WG	N1	UG/L	36	0.3 J:T	53	1.8
MW10	05-May-98	WG	N1	UG/L	10000	170	1900	4800
	01-Jun-98	WG	N1	UG/L	4600	91 J:T	1500	3500
	15-Jul-98	WG	N1	UG/L	8200	98 J:T	17000	3800
MW14	05-May-98	WG	N1	UG/L	0.1 U	0.15 UJ:2	0.12 U	0.35 UJ:2
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
MW15	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
NGMW01	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U

Legend:

WG = Water
BZ = Benzene
U = Non-detect

N1 = Environmental Sample
BZME = Toluene
UJ:2 = Estimated non-detect due to method blank contamination

FD1 = Field Duplicate Sample
EBZ = Ethylbenzene

UG/L = Micrograms per Liter

J:T = Estimated due to Trace level detection

Analytical Data Summary Table 2
Monitoring Well Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: SW8020

Page 3

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
NGMW06	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
VMP01	05-May-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	01-Jun-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
	15-Jul-98	WG	N1	UG/L	0.1 U	0.11 U	0.12 U	0.25 U
VMP02	05-May-98	WG	N1	UG/L	1300	17 J:T	620	90
	01-Jun-98	WG	N1	UG/L	350	5 J:T	310	130
	15-Jul-98	WG	N1	UG/L	2000	20 J:T	120	140

Legend:

WG = Water
 BZ = Benzene
 U = Non-detect

N1 = Environmental Sample
 BZME = Toluene
 UJ :2 = Estimated non-detect due to method blank contamination

FD1 = Field Duplicate Sample
 EBZ = Ethylbenzene

UG/L = Micrograms per Liter

J:T = Estimated due to Trace level detection

PART IV

Summary of Analytical Data from Site Treatment System

Analytical Data Summary Table 3
Treatment System Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: MTO-3S

Page 1

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	PHCG	XYLENES
ATMO01	05-May-98	GS	FD1	PPMV	16	19	2.8	1000	33
	05-May-98	GS	N1	PPMV	19	23	3.2	1400	36
STACK01	01-Jun-98	GS	N1	PPMV	7.2	12	2	690 J :3H	46
	16-Jul-98	GS	N1	PPMV	5.9 J :3H	5.7 J :3H	0.73 J :3H	430 J :3H	22 J :3H
VEFSKID01	01-Jun-98	GS	N1	PPMV	0.76	0.78	2	440	34

Legend:

GS = Soil Gas

N1 = Environmental Sample

PPMV = Parts per Million Volume

U = Non-detect

BZ = Benzene

BZME = Toluene

EBZ = Ethylbenzene

PHCG = Petroleum Hydrocarbons (Gasoline)

J :3H = Estimated due to high surrogate recovery

Analytical Data Summary Table 4
Treatment System Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: M8015V

Page 1

Location	Sample Date	Matrix	Sample Type	Units	PHCG
EPOTW01	05-May-98	WG	N1	MG/L	1.3
	01-Jun-98	WG	N1	MG/L	2.9
	15-Jul-98	WG	N1	MG/L	0.89

Legend:

WG = Water

N1 = Environmental Sample

FD1 = Field Duplicate Sample

MG/L = Milligrams per Liter

PHCG = Petroleum Hydrocarbons (Gasoline)

Analytical Data Summary Table 5
Treatment System Sampling Results Between 1-MAY-98 and 31-JULY-98

Facility: Naples Truck Stop, Utah

Method: SW8020

Page 1

Location	Sample Date	Matrix	Sample Type	Units	BZ	BZME	EBZ	XYLENES
EPOTW01	05-May-98	WG	N1	UG/L	49	34	9.2	270
	01-Jun-98	WG	N1	UG/L	46	66	10	570
	15-Jul-98	WG	N1	UG/L	10	13	1.1	150

Legend:

WG = Water

BZME = Toluene

N1 = Environmental Sample

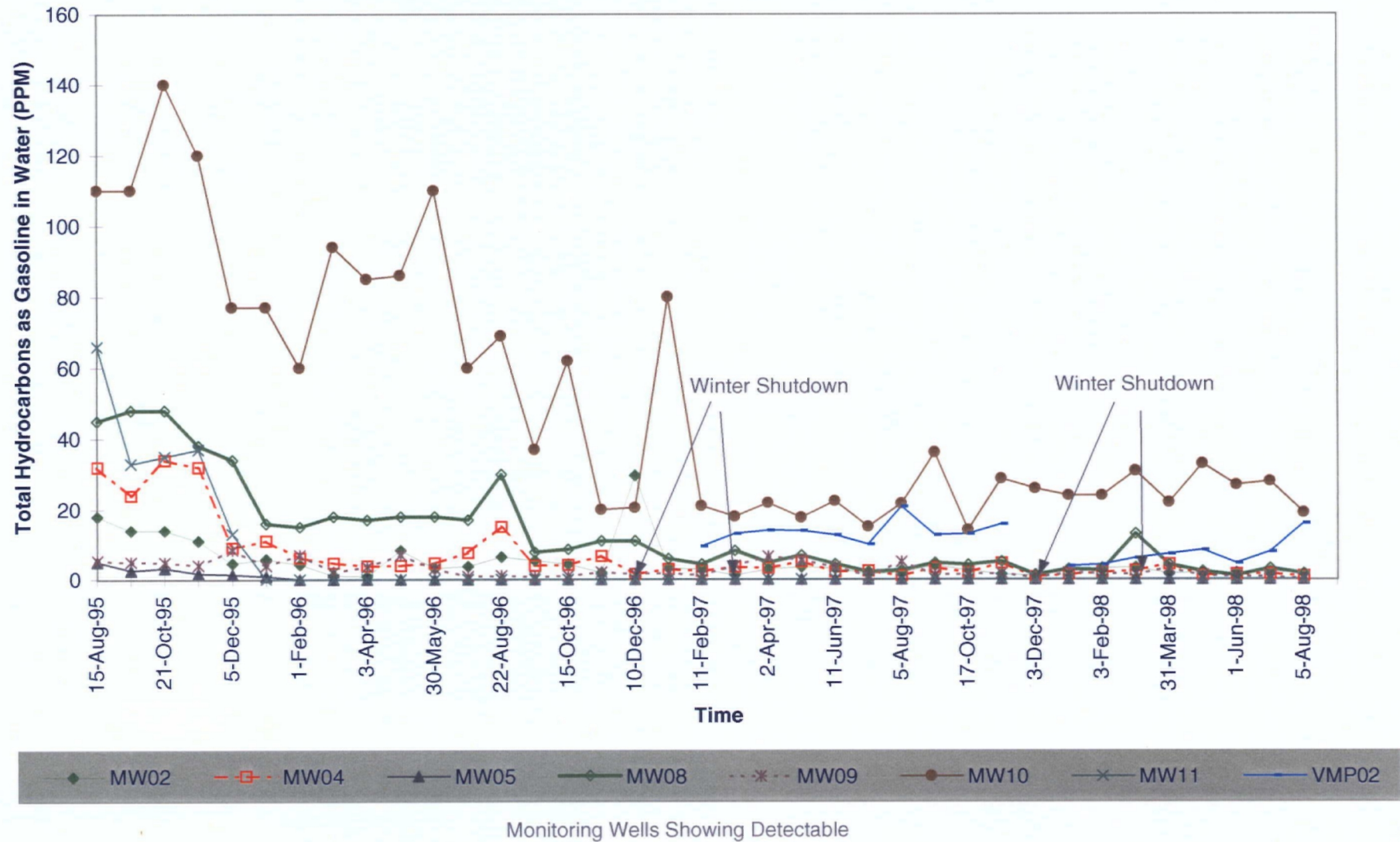
EBZ = Ethylbenzene

FD1 = Field Duplicate Sample

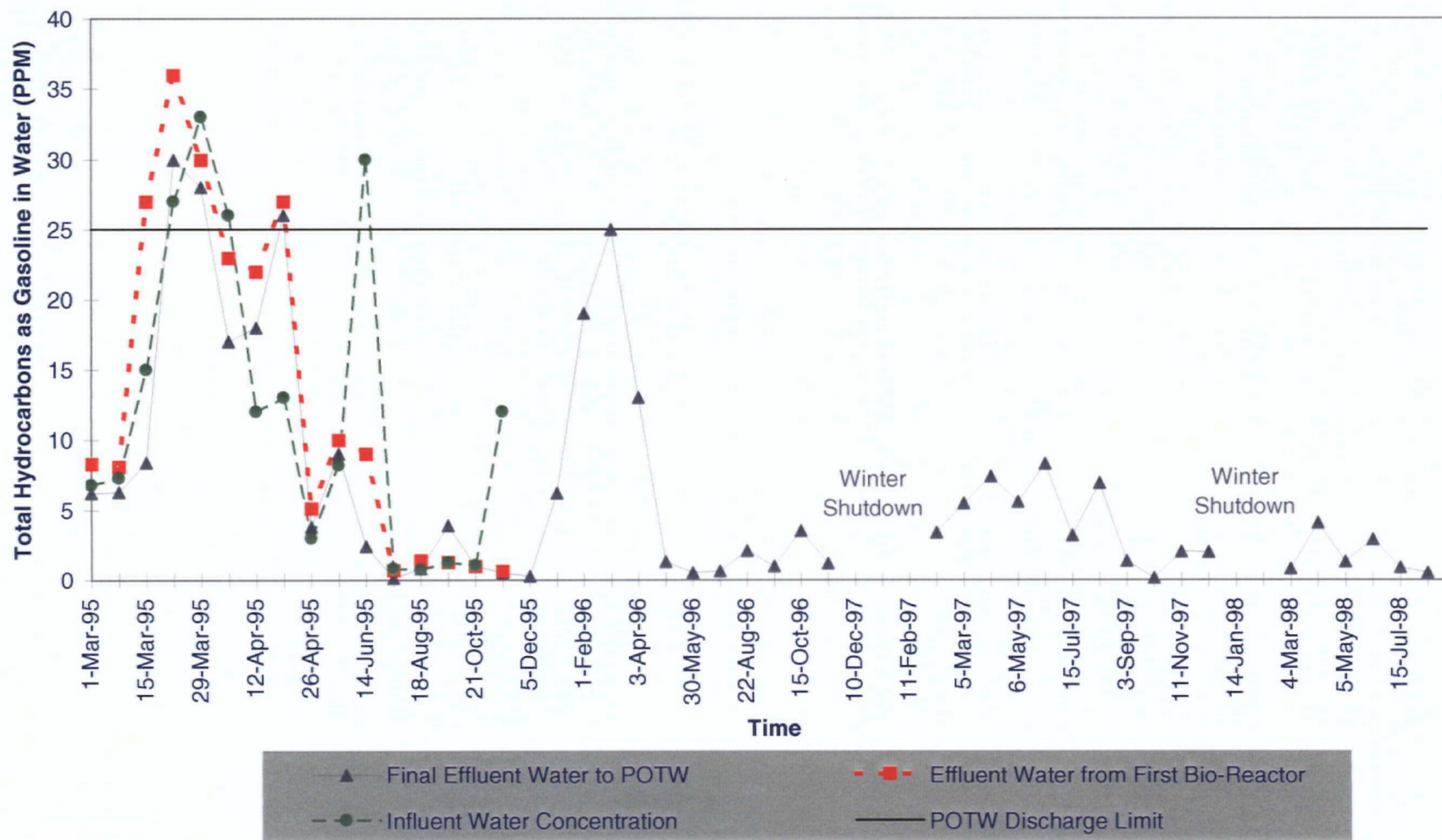
UG/L = Micrograms per Liter

BZ = Benzene

Part V. Monitoring Well Concentrations Over Time (Since August 1995)

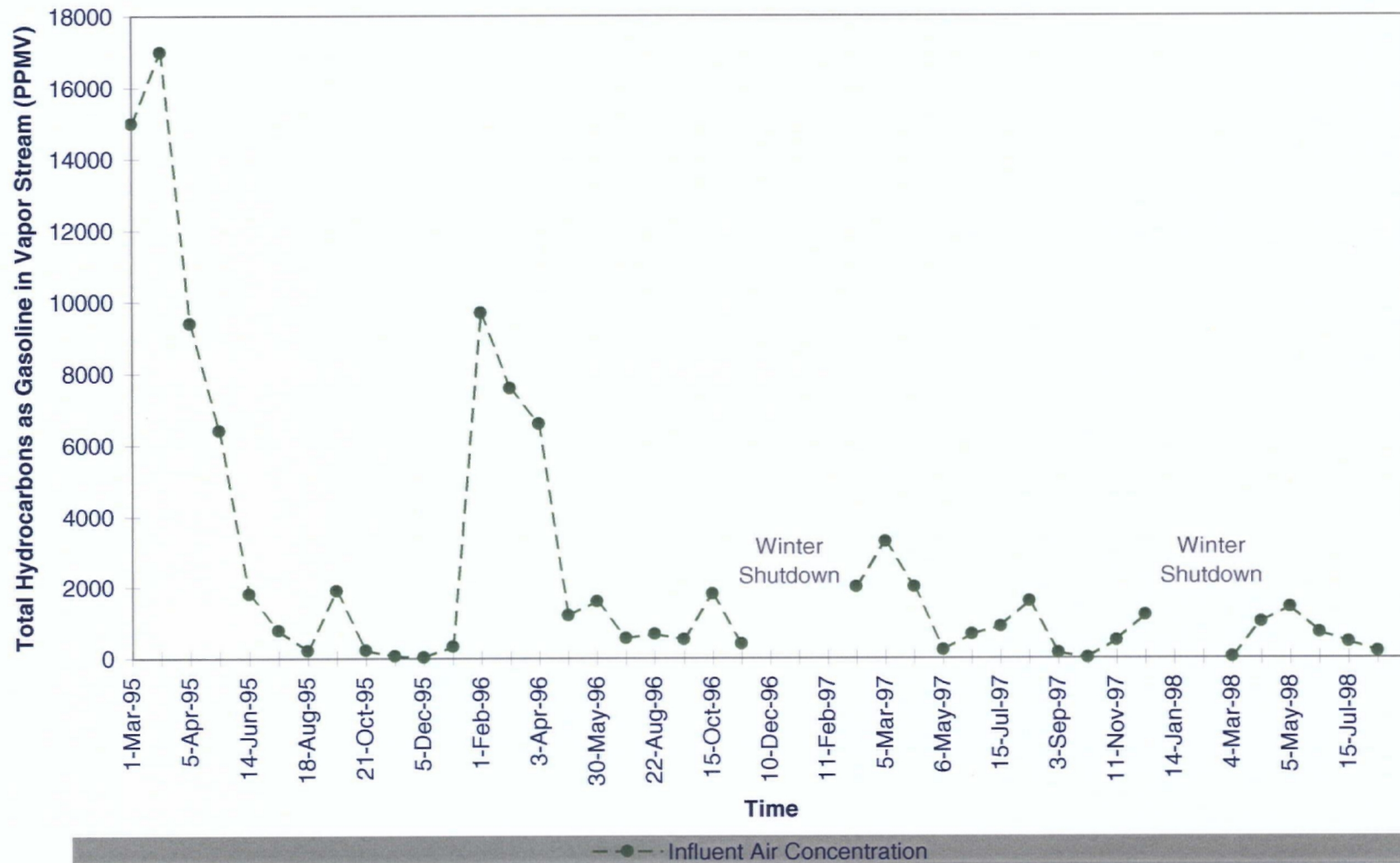


Part VI. Water Treatment Concentrations Over Time



Effective January 1, 1996 Influent Water and Effluent Water from First Bio-Reactor samples were not collected due to Bio-System bypass

Part VII. Vapor Concentrations Over Time



Effective January 1, 1996 Influent Air and Effluent Air from First Bio-Reactor samples were not collected due to Bio-System bypass

Part VIII

Summary of Quarterly Monitoring Results

PART VIII

Summary of Quarterly Monitoring Results

This quarterly reports covers the period of operation for May, June, and July 1998. Monthly sampling of groundwater monitoring wells was performed in May, June, and July. Vapor samples from the treatment system were also taken in May, June, and July 1998.

Results of the data quality assessment included as Part II of this Attachment A indicate the quality of data collected during the quarter is acceptable and all results are usable with only minor qualifications.

Groundwater Monitoring/Treatment System Results For Water

Part V presents the graphical results of sampling from up to 14 groundwater monitoring wells during the quarter and Part III the summary of analytical data collected. Detectable concentrations of gasoline and BTEX were measured in 6 of the wells in May, 9 of the wells in June, and 8 of the wells in July, 1998. Concentrations of gasoline were measured by method M8015V and levels of BTEX were measured by method SW8020. All monitoring wells with levels of gasoline contamination greater than the reporting limit as measured by method M8015 were selected for graphical presentation in Part V. Concentrations of gasoline and BTEX were highest from MW10, located near the original center of the groundwater contamination plume. Gasoline concentrations measured in monitoring wells were as follows:

Table 2- Total Petroleum Hydrocarbon Concentrations (as Gasoline)			
Well No	TPH Concentration in May '98 (mg/l)	TPH Concentration in Jun.'98 (mg/l)	TPH Concentration in Jul.'98 (mg/l)
MW-01	ND	0.053 J	ND
MW-02	1.9	1.8	2.1
MW-03	ND	0.042 J	0.041 J
MW-04	1	1.4	1.5
MW-06	ND	0.05 J	0.022 J
MW-08	2.2	1	3
MW-09	0.92	0.88	0.68
MW-10	33	27	28
MW-14	ND	ND	ND
MW-15	ND	ND	ND
VMP01	ND	ND	ND
VMP02	8.3	4.5	7.8
NGMW01	NA	NA	ND
NGMW06	ND	ND	ND

PART VIII

Summary of Quarterly Monitoring Results (Continued)

Overall, concentrations of gasoline measured from the 14 wells **remained steady, ranging** from an average of **3.6 mg/l** as gasoline in **May**, to **2.8 mg/l** in **June**, to **3.1 mg/l** in **July**. BTEX concentrations generally coincided with measured concentrations of gasoline since BTEX compounds are components of gasoline. (Refer to Part III for complete details).

Part VI presents the graphical results of water treatment concentrations collected during the quarter and Part IV presents the summary of analytical data collected. The effluent to POTW water sample result collected in **May, June, and July** indicates hydrocarbons measured as gasoline well below the 25 ppm (mg/l) POTW discharge limit (**1.3 mg/l, 2.9 mg/l, and 0.89 mg/l respectively**). Effluent concentrations to the system have been consistently below the discharge limit for the past **twelve** quarters of monitoring.

Since March 1998, extraction wells RW-1, RW-2, RW-3, RW-4, RW-9, and RW-10, RW-11, RW-12 have been online. Recovery wells RW-11 and RW-12 lie within the area of highest concentration within the site.

The average effluent water concentration measured as gasoline over the period of **1 May** through **July** was **1.7 ppm**. The total effluent load of gasoline extracted from the groundwater over **90** days is approximately **43** pounds calculated using effluent concentration data and effluent totalizer readings between 5/05/98 and 07/15/98.

Treatment System Results for Vapor

Part VII presents the graphical results of vapor treatment concentrations over time and Part IV the summary of analytical data collected from the treatment system. Concentrations of influent soil gas vapor as gasoline during **May** was measured at **1,400 ppmv**. During **June and July**, the influent concentrations **dropped to 690 and 430, respectively ppmv**. **The drop in vapor concentrations is primarily due to continuous operation of the groundwater extraction system.** An estimated average flow of 85 cubic feet per minute (cfm) is processed through the system based on system airflow measurements. The total airflow processed during the quarter was some **11,016,000** cubic feet or **122,400** cubic feet per day.

The total vapor phase TPH treated over the quarter is some **2,500** pounds based on the vapor concentration. To date, approximately **73,130** pounds of volatile hydrocarbons have been removed from the recovery wells, based on **monthly influent vapor and effluent water** concentrations.

JACOBS ENGINEERING

September 22, 1998

Transmittal
Tr# 98U009

TO: Mr. Rich Haavisto
Technical Manager
U.S. Corps of Engineers
Environmental Engineering Branch
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FROM: Mike Sajadi *MS*
Project Manager
Jacobs Engineering Group
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Sacramento, CA 95833

ON: Contract No. DACA05-92-D-0040, Delivery Order 15
JEG Project No. 27-H103-15 Vernal, Utah - Vernal Naples Truck Stop

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FABRICATION DESIGN YOUR FILE X

ENCL NO.	DRAWING OR SPEC NUMBER	REV.	DESCRIPTION	DATE
1.		0	POLREP #61/JE #42	22 Sep 98

REMARKS:

	<u>Kleinfelder</u>	<u>IT Corp</u>
<u>Jacobs</u>	R. Zollinger (S.L.C.)	A. Meyers (Ohio)
D. Christensen *		
R. Hergenrader *	<u>USACE</u>	<u>EPA</u>
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Project Files	R. Haavisto (Sac)	
Contract Files*		

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